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Diversity and Distribution of Natural Enemies (Predators and Parasitoids) of Bagworms (Lepidoptera: Psychidae) on Selected Host Plants in an Oil Palm Plantation

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Several species of flowering plants provide food sources and shelters for natural enemies of bagworms (Psychidae) in oil palm (Elaeis guineensis: Palmae). The abundance and diversity of these natural enemies on three species of host plants (Tumera spp. Cassia cobanensis and Antigonon leptopus) was monitored at monthly intervals for 15 months in 2005 - 2006. Seven hymenopteran and one hemipteran family were identified from 883 individuals collected. Chalcididae was the most dominant family (69.2%) and represented by three species of Brachymeria (B. lasus, B. lugubris and B. carinata). Other families were Ichneumonidae, Braconidae, Eulophidae, Eupelmidae, Elasmidae and Eurytomidae. Only two species of hemipteran predators (Cosmolestes picticeps and Sycanus dichotomus) were collected. The abundance of natural enemies were significantly different among sampling periods (Kruskal Wallis $X^2= 38.791$, $p<0.05$) and host plants (Kruskal Wallis $X^2= 86.868$, $p<0.05$). Most parasitoids including B. carinata and Dolichogenidae metasea preferred C. cobanensis and Tumera spp. over Antigonon leptopus ($z=2207.5$, $p<0.05$ and $z=4312$, $p=0.00$ respectively). Apart from nectar in the flowers, C. cobanensis has nectar-filled stipules on its stem that attract more natural enemies. However, no significant preference of the parasitoids on C. cobanensis over Tumera spp. was detected ($z= 10571$, $p>0.05$). Both plants also provided good refuges for the natural enemies. This study shows the importance of C. cobanensis and Tumera spp. on host plants in oil palm plantations to support high abundance and diversity of natural enemies that would contribute to sustainable control of oil palm bagworms.

Keywords: Bagworms, parasitoid, predator, beneficial plant, oil palm.

